

### Botany at the American Association.

The botanical papers presented to the association at the Buffalo meeting were about the same in number and quality as last year. Those which may be classed as strictly botanical are six, as follows:

Asa Gray, Memoranda of a revision of the North American violets.

J. M. Coulter and J. N. Rose, Synopsis of North American pines, based upon leaf anatomy.

C. R. Barnes, A revision of the North American species of the genus *Fissidens*.

Lillie J. Martin, Plan for laboratory work in chemical botany.

W. J. Beal, The bulliform or hygroscopic cells of grasses and sedges compared.

W. G. Farlow, The development of the Gymnosporangia of the United States.

The several papers will eventually appear in the pages of the *GAZETTE*, and in this place it is only necessary to say a few words about them, and to summarize the discussions that followed the reading of them.

In the absence of the author, the paper on violets was read by Prof. Coulter. This paper and the two next mentioned, being so fully systematic, gave little occasion for discussion. One feature of Prof. Coulter's paper, the use of histological characters as the basis of arrangement, aroused much interest. Mr. Arthur commended the movement to bring such characters into use in classification, when found specially serviceable, and mentioned the success of Hackel, who used the tissue characters of the leaves to distinguish some of the difficult species and forms of the *Festucas* of Europe. Prof. Barnes alluded to the labors of Constantin and Vesque in discriminating plants by the characters of the leaves; they have taken up this work with the idea of making a complete key to the families. Mr. Morong desired to add testimony to the value of this method. He had recently been paying much attention to *Naias*, and finds that it is necessary to consider the cellular structure of the leaf and stem in order to decide between the species. He also said: "I am very glad to hear this paper, running somewhat in the same direction as my own studies. I wish botanists generally would feel more interest in the matter, for we have a large field open to us for new methods of systematizing."

Miss Martin's paper suggested the change which has come to

American botany in the last few years, and Mr. Arthur summarized this as starting with the collecting and classifying of flowering plants, afterwards embracing the lower orders of plants, reaching at the present time the stage when histology and morphology are receiving marked attention, with some notice given to physiology. "The chemistry of plants," he added, "is now investigated almost entirely by the chemists. If this paper does something to call attention to the fact that the chemistry of plants should be studied by botanists as well as by chemists, it will have served a most excellent purpose."

Prof. Beal's paper was illustrated with a large number of diagrams showing the position of the hygroscopic cells. A desire was expressed to know more regarding their function, a point not specially dealt with by the paper. This was explained; whereupon Prof. Burrill raised the query of how it happened that they so frequently occurred upon the upper surface of the leaf, if their office was to roll the leaf up in order to decrease evaporation and prevent the drying up of the leaves. When the leaves were rolled upon the upper surface, it exposed the under part, which usually has more stomata and softer tissues. Prof. Beal mentioned the fact, as a partial explanation, that many grasses habitually twist their leaves and present the lower surface to the sky. Prof. Pillsbury suggested a possible connection between the distribution of the hygroscopic cells and the folding of the leaf before vernalation.

Dr. Farlow's paper was supplemented by numerous specimens of the different species of fungi that the paper dwelt upon, and some of the results of the cultures which furnished the principal data. Prof. Burrill spoke of the value of the paper as a basis of systematic study, and desired to learn the methods of conducting the experiments. Upon being assured that the details will shortly be published, he added that the results are of much economic importance. Upon the prairies of Illinois these fungi are doing serious harm. He had received a letter from an orchardist since coming to the meeting, in which he complains earnestly of acres of orchard being destroyed as the result of planting a cedar hedge around it.

Several other papers, which are in some measure botanical, should be spoken of in this connection. They are the following:

J. S. Newberry, On the cretaceous flora of North America.

E. W. Claypole, On some carboniferous wood from Ohio.

B. E. Fernow, Biology of timber trees with special reference to the requirements of forestry.

E. Lewis Sturtevant, Atavism the result of cross breeding lettuce; also A study in agricultural botany.

C. Richardson and C. A. Crampton, On the presence of cane sugar and allantoin in ungerminated embryo of wheat.

Lillie J. Martin, Preliminary analysis of leaves of *Juglans nigra*.

Helen C. DeS. Abbott, Certain chemical constituents of plants considered in relation to their morphology and evolution; also Preliminary analysis of a Honduras plant named 'Chichipate'.

V. C. Vaughan, Tyrotoxicon (cheese poison); its occurrence in milk.

W. McMurtrie, Blue milk and ropy cream.

D. E. Salmon and Theobald Smith, The bacterium of swine plague.

Theobald Smith, On the variability of pathogenic organisms as illustrated by the bacterium of swine plague.

D. E. Salmon, The theory of immunity from contagious diseases.

It is not possible for us to give more than a slight account of a part of these papers, except of two or three which will appear in our columns in the form of abstracts prepared by the authors.

Dr. Sturtevant's first paper described several lettuce plants grown from seed obtained from crossing two dissimilar varieties. One plant in particular much resembled the wild type, and the conclusion is reached that atavism has been one of the determining influences. The study in agricultural botany by the same author went to show that plants under cultivation have circumscribed limits of variation, and that the present type varieties, particularly of scorzonera, parsnip and carrot, probably originated from natural prototypes, and not by human selection.

The paper by Miss Martin and the second one by Miss Abbott were excellent examples of careful and valuable analytical work. Miss Abbott isolated a new camphor and a yellow coloring matter, specimens of which were exhibited. Miss Abbott's first paper, an abstract of which is to appear in the *GAZETTE*, excited very favorable comment. The subject is worthy the careful attention of botanists.

Prof. Vaughan's paper is of special economic interest. He traces the poisonous effects occasionally experienced from eating cheese and ice cream to the presence of a ptomaine, which he has called tyrotoxicon, and which from its nature and the circumstances attending its occurrence is believed to be due to a micro-organism. He also points out that cholera infantum may be due to the same or a similar cause.

Prof. McMurtrie has studied the phenomenon of ropy cream from a chemical standpoint and finds no grounds for the opinion

that it is due to a simple physical or chemical change, but concludes that the evidence points to the presence of some form of bacteria. Prof. Burrill in discussing the paper stated that he had also given attention to the subject, and that while he did not doubt it was due to germs yet he had been unable to decide upon the particular kind. The blue milk spoken of in the title is an incidental accompaniment of the ropy cream, and is not the blue milk mentioned in works on bacteria.

Mr. Smith's paper is based upon observations of microbes obtained from three separate outbreaks of swine plague—one in the District of Columbia, one in Nebraska and one in Illinois. The microbes were identical in morphological, but different in biological characters. This variation is all the more interesting because not before admitted with any of the pathogenic organisms heretofore studied.

A considerable discussion followed the reading of Dr. Salmon's paper on the theory of immunity from contagious diseases, participated in by Drs. Minot, Arthur, Burrill, Bowditch and the author. Dr. Minot objected to the use of heated bouillon for testing the exhaustion theory. Dr. Arthur suggested that sterilization in such a case might properly be effected by filtration through porcelain; he also spoke of his own studies on pear blight as in some measure supporting the theory. Dr. Bowditch asked if the theory might not be extended to the lessened effects experienced from the continued bites of insects. The author thought it could.

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### Botanical Club of A. A. A. S.

The meetings of the Botanical Club have increased in attendance and interest from its organization, three years ago, at Minneapolis. The fourth meeting, just held at Buffalo, brought together more botanists than ever before, and still further compacted an organization which has in it the promise of great usefulness. Ninety-one names were entered upon the register slips, but the knowledge that several botanists neglected to register makes it more than probable that over one hundred were in attendance. This gives a very large percentage of botanists in the general association, and also adds weight to the thought expressed by some that there should be a section of botany.

The term botanist, of course, includes a great variety of persons, from those merely interested to those professionally engaged in botanical work, but as one of the objects of the club is to stimulate a general interest in the subject, all such persons are legiti-